US009638390B2

(12) **United States Patent**
Wu et al.

(10) **Patent No.: US 9,638,390 B2**
(45) **Date of Patent: May 2, 2017**

(54) **AXIALLY SYMMETRIC LED LIGHT BULB**

(71) Applicant: **UNITY OPTO TECHNOLOGY CO., LTD.**, New Taipei (TW)

(72) Inventors: **Chih-Hsien Wu**, New Taipei (TW); **Sen-Yuh Tsai**, New Taipei (TW); **Chun-Chieh Huang**, New Taipei (TW); **Yu-Chang Chen**, New Taipei (TW)

(73) Assignee: **Unity Opto Technology Co., Ltd.**, New Taipei (TW)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 115 days.

(21) Appl. No.: **14/817,325**

(22) Filed: **Aug. 4, 2015**

(65) **Prior Publication Data**

US 2016/0341367 A1 Nov. 24, 2016

(30) **Foreign Application Priority Data**

May 18, 2015 (TW) 104207617

(51) **Int. Cl.**

F21K 99/00	(2016.01)
F21V 19/00	(2006.01)
F21V 3/04	(2006.01)
F21V 3/02	(2006.01)
F21K 9/232	(2016.01)
F21K 9/66	(2016.01)
F21Y 115/10	(2016.01)

(52) **U.S. Cl.**

CPC ***F21V 3/04*** (2013.01); ***F21K 9/232*** (2016.08); ***F21K 9/66*** (2016.08); ***F21V 3/02*** (2013.01); *F21Y 2115/10* (2016.08)

(58) **Field of Classification Search**

CPC F21V 3/02; F21V 3/04; F21K 9/232

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,988,911	A *	1/1991	Miller	F21V 3/02 313/113
2011/0080096	A1 *	4/2011	Dudik	F21V 29/2212 315/112
2011/0080742	A1 *	4/2011	Allen	F21V 3/00 362/294
2014/0160762	A1 *	6/2014	Dudik	G02B 5/0242 362/294

* cited by examiner

Primary Examiner — Elmito Breval

(74) *Attorney, Agent, or Firm* — Rosenberg, Klein & Lee

(57) **ABSTRACT**

An axially symmetric LED light bulb includes a lamp shade, a substrate and a connecting seat. The substrate installed on the connecting seat includes plural LED light sources. The lamp shade has an edge connected to the connecting seat, and the substrate is covered inside the lamp shade. The lamp shade has an unequal thickness with a thicker top and thinner sides. The axially symmetric LED light bulb provides excellent light uniformity and wide-angle illumination.

8 Claims, 10 Drawing Sheets